On-Board Diagnostics (OBD)

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Alliance of Automobile Manufacturers

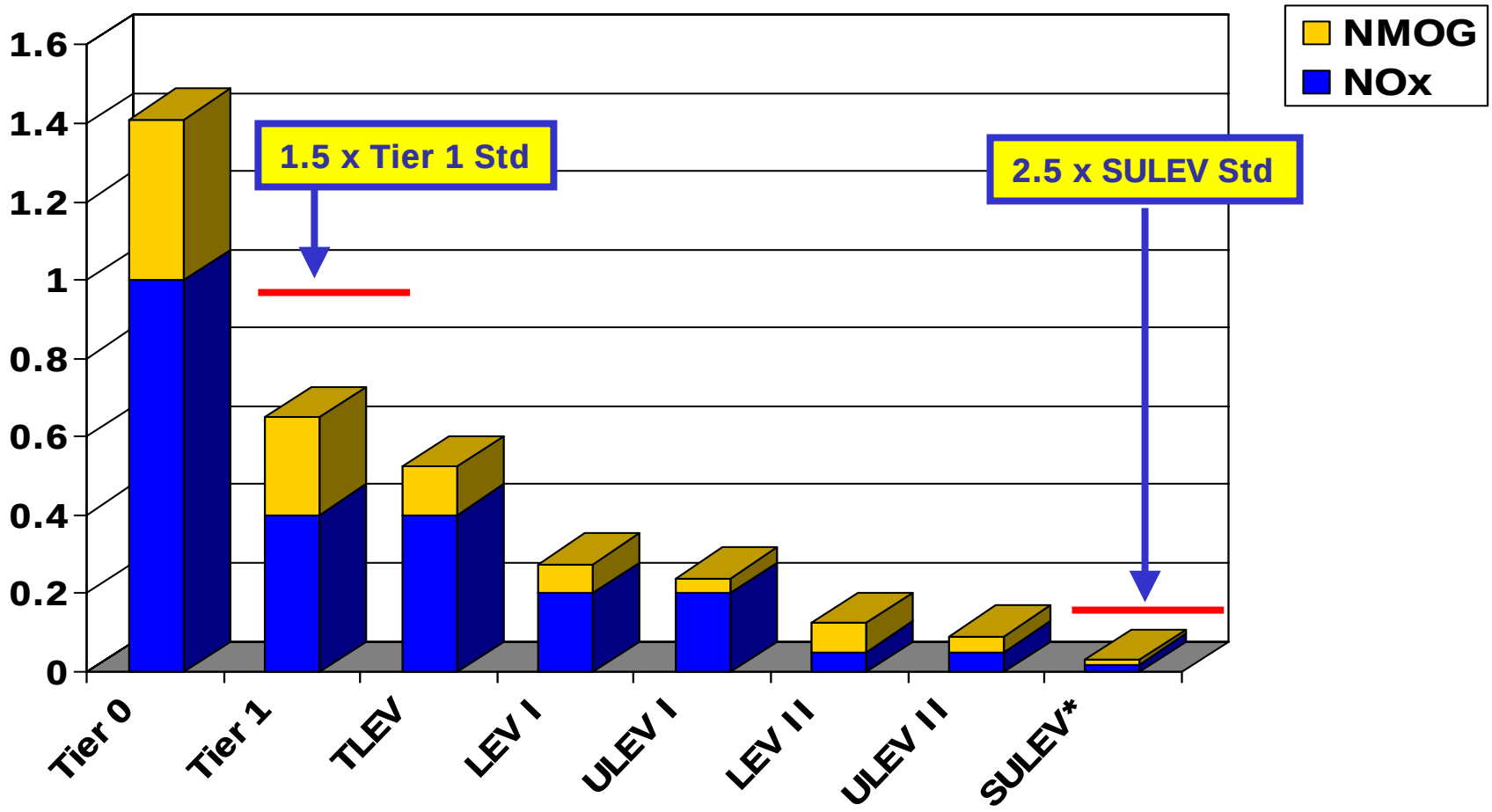
Members

- BMW
- Ford
- Mazda
- Porsche
- Volkswagen
- DaimlerChrysler
- General Motors
- Mitsubishi
- Toyota

Agenda

- Overview
- Position
- OBD Functions
- Concerns with OBD II
- OBD II and I&M
- Summary

Emission Standards



* SULEV is 120,000 mile standard, all others 50,000-mile standard

Other Considerations

- Emission standards
- Safety
- Performance
- Comfort & convenience features
- Vehicle operating conditions
- Price

Overview

- OBD extraordinarily expensive
- Requires substantial OEM resources
- Substantial risks for manufacturers – production delays, fines, and recalls
- Requirements constantly changing – regulatory, concerns, deficiencies

Position on OBD

- OBD system is a solid emissions monitoring tool
- OBD provides substantial benefits to consumers, repair technicians, and air quality
- There is a limit to OBD

OBD Functions

- Monitor every component that *could* cause emissions to increase
- Monitor itself
- Store faults and conditions at time of fault
- Communicate status of OBD and emission system to service technician

Concerns with OBD

- OBD requirements are becoming more and more complex, requiring more and more OEM resources
- Cost-benefit declining rapidly

OBD Complexity

- OBD requirements initially covered:
  - Fuel system
  - EGR
  - ECU/PCM
  - MIL
- Modified in 1989 (OBD II), 1991, 1993, 1994, 1996, 2002, and now in 2006
- Latest proposal 150 pages of detailed technical, enforcement, testing and certification requirements

OBD Requirements (Gas)

- Catalyst (HC & NOx)
- Heated catalyst
- Misfire
- Evaporative system
- Secondary air
- Fuel system
- Exhaust gas
- PCV system
- Engine cooling
- Cold start emissions
- Air conditioning
- Variable valve timing
- Direct ozone reduction
- Comprehensive Component Monitoring
- Rate based monitoring

Resources

- Engineers
- Laboratories
- Certification
- Production vehicle testing
- In-use monitoring

OBD Requires

- Hardware changes for the OBD system
- Hardware changes for the emission system

OBD Repair Cost-Benefit

- 1990 Tier 0 vehicle
  - Standard = 0.4 g/mi
  - 1.5 x Std = 0.6 g/mi
  - Benefit = 0.2 g/mi
- 2007 SULEV vehicle
  - Standard = 0.01 g/mi
  - 2.5 x Std = 0.025 g/mi
  - Benefit = 0.015 g/mi

- Tier 0 repair benefit 13+ times benefit for SULEV
- Cost of SULEV vs. Tier 0 catalyst?

OBD Perspective

- OBD is important, but it does NOT reduce emissions
- Vehicle emissions dropped BEFORE OBD introduced
- ARB adopts and claims credit for emission requirements that are not monitored – portable power equipment, watercraft, motorcycles, etc.

OBD Should NOT

- Prohibit vehicles that meet emission standards
- Eliminate promising emission control technologies
- Change annually
- Cause false MILs

OBD I&M Features

- Standardized DTCs
- Diagnostic connector
- Readiness flags
- Production vehicle tests
- Permanent DTCs (2010-2012)
- CAL-ID and CVN
- It’s ALL about the “M”

Summary

- OBD is a mature technology
- Continues to evolve
- Must strike a balance emissions, costs, potential false MILs
- OBD performs as designed
- OBD provides benefits for repair technicians, consumers, and air quality